Journal of Positive Sciences (JPS) eISSN: 2582-9351, https://positive-sciences.com JPS. 2025 Feb; 5(2): 37-48

Article info
Received on: 16.01.2025
Accepted on: 20.02.2025
Published on: 10.03.2025
doi: https://doi.org/10.52688/ASP83718

Research Article

Estimating The Functional Relationship Of Global Gold Prices Using A Threshold Regression (Tr) Model For The Period (2017-2024)

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ABSTRACT

The research aims to study the economic factors affecting global gold prices, and attempt to demonstrate the level of changes occurring in them by using the threshold regression (TR) model, which means trying to reveal some non-linear relationships that may represent economic reality. The research found the existence of three main thresholds for changes occurring in global gold prices. As the price of gold rises after the first threshold, the relationship becomes inverse with the global oil price and a direct relationship with the federal interest rate and the price of the Ethereum currency, in addition to the ability of the independent variables to explain (91%) of the changes occurring in the dependent variable. The research presents some recommendations, including holding an international conference to investigate the causes of sharp fluctuations in gold prices during the study period and ways to reduce their negative effects on investment portfolios and central banks.

Keywords: Threshold Regression (TR) model, Inverse/Positive relationship, Global Gold Price, Ethereum Price.

GLOBAL GOLD PRICE VOLATILITY AND ITS ECONOMIC IMPACTS

The world is witnessing sharp fluctuations in gold prices, significantly impacting various economic variables and the global economy. These fluctuations negatively affect financial markets. Economic thinkers emphasize gold's importance due to its unique properties as a safe-haven asset amid geopolitical instability and economic uncertainty, attracting investors—including central banks. This has driven a noticeable rise in gold prices in recent years, sparking debate among researchers. Pessimists warn of severe repercussions for global financial markets, while optimists argue that this shift could restructure the capitalist system by reinforcing gold's role as a key reserve asset for central banks to ensure financial and economic stability.

This study humbly attempts to examine the factors influencing global gold prices and identify competing investment commodities, such as oil (the backbone of the global economy) and virtual currencies (e.g., Ethereum), alongside the rise of the digital economy and the impact of interest rates on gold. The paper is structured into three sections:

1. The economic significance of gold.
2. Threshold Regression (TR) modeling and its practical implementation.
3. Quantifying factors affecting gold prices to identify optimal thresholds, enhancing economic forecasting.

Research Importance

Gold has recently played a pivotal role in global financial markets. Its price volatility poses significant risks to investment portfolios and financial institutions, underscoring this study's relevance in:

- Identifying causes of gold price fluctuations.
- Analyzing key economic factors (e.g., oil prices, U.S. Federal Reserve interest rates, Ethereum prices).
- Highlighting gold's role as a global benchmark for exchange rate stability and a hedge against crises, geopolitical shocks, and inflation.

Research Problem

The study addresses the negative effects of gold price volatility on the international economy and financial markets, particularly: (1) Impacts on central bank reserves and fiat currency values. (2) Risks to investment portfolios.

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Core Question: What economic factors amplify volatility in global gold prices?

Research Hypotheses

1. Gold's economic importance is growing as a low-risk investment tool, driving demand and price increases.
2. Gold prices can be predicted using a Threshold Regression (TR) model for 2024.

Research Objectives

(1) Apply the TR model to identify non-linear relationships reflecting economic realities. (2) Conduct static and dynamic forecasting of economic variables.

Methodology

1. Inductive approach: Analyzing Bitcoin price volatility patterns.
2. Econometric analysis: Testing hypotheses via EViews 12.

THEORETICAL FRAMEWORK OF GOLD'S GLOBAL ROLE

The Nature of Gold

Gold is a precious metal with millennia of human use, valued for rarity and diverse applications. Production is concentrated in the U.S., Australia, Brazil, Canada, and China, reaching 3,100 tons in 2017 and 3,300 tons in 2024. Top gold reserves are held by the U.S., Germany, and Italy; Saudi Arabia, Lebanon, Algeria, and Iraq lead Arab nations (Al-Ardawi, 2022:43).

Units & Purity:

(1) Measured in troy ounces (31.103g); 1kg = 32.150 oz. (2) Purity is graded in 24 karats (e.g., 18K = 75% gold).

Gold's Economic Significance (Anilkumar & Puneet, 2021:324):

- Bretton Woods (1944): Gold stabilized exchange rates at $35/oz pegged to the USD.
- Monetary reserves: Central banks hold gold to back currencies.
- Safe-haven asset: Preserves value during market turmoil.
- Investment/hedging tool: Protects wealth during crises (Ahmed, 2023:67).
- Liquidity: Universally accepted for trade and debt settlement.
- Inflation hedge: Shields against financial risks.

Factors Influencing Gold Prices

- Interest rates: Inverse relationship with gold demand (Anilkumar & Puneet, 2021:326).
- Fiscal policies: Tariffs and taxes alter gold's attractiveness.
- Geopolitical crises: Wars, pandemics, and political rhetoric increase volatility (Fallahi, 2019:64).
- Inflation: Gold retains value when fiat currencies depreciate.
- Supply dynamics: Mining output, central bank sales, and recycling (Ahmed, 2023:68).
- Demand drivers: Jewelry, electronics, central bank purchases, and speculative investment (Nilam P., 2021:57).
- Oil prices: Rising oil costs reduce gold demand due to economic strain.
- Market crashes: Gold rises when stocks/bonds fall (Naseem, 2024:87).
- Cryptocurrencies: High-risk crypto surges may boost gold's appeal as a tangible asset (Al-Issawi, 2024:88).

Gold Price Volatility (2017–2024)

Figure 1 illustrates price trends: 2017: ~1,254→2021:1,254/oz→2021:1,822/oz → 2024: $2,700/oz.

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Figure 1: Gold price fluctuations and other parameters.

Federal Reserve rates: Post-2021 rate cuts spurred gold's rise as investors sought stability.

Key Relationships:

1. Oil (X_1): Inflationary periods strengthen gold's hedge role.
2. Fed rates (X_2): Rate cuts increase gold demand; hikes may correlate during inflation.
3. Ethereum (X_3): Positive link with gold during crises (e.g., COVID-19).

Theoretical Introduction to Threshold Regression (TR) Model

Econometrics represents an application of statistical and mathematical methods for analyzing various economic data, in addition to providing an objective perspective for testing economic theories. There are two fundamental approaches to dealing with economic data: (1) The deductive approach, which does not require the use of econometric tools. (2) The inductive approach, which seeks and requires the use of quantitative analysis to examine the nature of economic relationships (Attiya, 2005:34). This is what we aim to employ in the second part of the research by applying the Threshold Regression (TR) model, which seeks to test the non-linear relationships in global gold prices.

First: The Concept of Threshold Regression (TR) Model (Al-Ghaish, 2022: 256):

The Threshold Regression model is based on identifying multiple sub-models within the general framework of the economic phenomenon. Each sub-model operates in a distinct space from the others, and these spaces are divided according to a threshold variable (Abdulkarim, 2022: 54). The Threshold Regression model is a type of non-linear regression characterized by linear gradients across different regimes. In this model, the dependent variable reflects a specific number of known and unknown thresholds in the estimated model. It is important to emphasize that Threshold Regression models are used when dealing with volatile time series data that exhibit instability, with periods of significant increases or decreases in indicators—a reflection of real-world economic conditions (Al-Dawakhli, 2022: 245).

Thus, Threshold Regression is essentially a least squares regression applied to breakpoints, with data reordered according to the threshold variable. As a non-linear model, it describes economic time series variables in a way that varies based on the nature of the series, changing with its movements and the regime in which it operates. Explanatory variables in the Threshold Regression model are divided into two types: those with parameters that align with the Threshold Regression system and those that do not.

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This implies the existence of a specific arrangement or regime (Regime-Specific) that clarifies the nature of the relationships between economic variables. Consequently, the threshold variable influences the dependent variable through its coefficient, and it is thus referred to as the threshold variable, denoted as (c). As illustrated in the following equations (Al-Ghaish, 2022: 64):

$$y_t = \alpha_0 + \alpha_1 X_t + \alpha_2 Z_t + \sum t \quad \text{---------- 1}$$

$$y_t = \alpha_0 + \alpha_1 X_t + \alpha_{21} Z_t + \sum t \quad \text{---------- 2} \qquad \text{if } z_t < c$$

$$y_t = \alpha_0 + \alpha_1 X_t + \alpha_{22} Z_t + \sum t \quad \text{---------- 3} \qquad \text{if } zt > c$$

1 Second: Types of Threshold Models (Abduikareem, 2022: 235):

There are several standard models for studying economic phenomena, including threshold models. Each type has its own practical steps for estimating the appropriate econometric model, along with statistical conditions that make these models effective methods for estimating optimal economic relationships, as they can accurately represent reality.

- Threshold Regression (TR) Model with Immediate Transition
- Self-Exciting Threshold Autoregressive (STAR) Model with Smooth Gradual Transition
- Panel Threshold Regression (PTR) Model with Immediate Transition (Al-Dawakhli, 2022: 85)
- Panel Threshold Regression (PSTR) Model with Gradual Transition

Third: Steps for Implementing a Threshold Regression Model:

To implement a threshold model, several key steps must be followed:

- Testing the Stationarity of Time Series: This involves examining whether the time series are stationary at level or first difference (Al-Jundali, 2021: 233).
- Testing for Nonlinear Relationships: Using the BDS test for economic variables, which helps estimate the causal relationships in the regression model for global gold prices.
- Estimating the Threshold Regression (TR) Model: Once the model meets certain conditions, the immediate transition threshold regression model can be estimated.
- Analyzing the Results: The estimated econometric model's results are analyzed both economically and statistically.
- Model Quality Tests: Conducting tests to evaluate the model's quality to ensure reliable forecasting of global gold price behavior (Abduikareem, 2022: 235).

Measuring Changes in Global Gold Prices Using the Threshold Regression (TR) Model

Having reviewed key economic indicators affecting gold prices in an unstable economic environment, along with presenting the theoretical framework of the Threshold Regression (TR) model, this section will analyze the fluctuations in global gold prices under volatile economic conditions.

First: Specification of the Econometric Model (Khalaf, 2015:34):

One of the most crucial methodological stages in developing an econometric model is identifying the economic variables (as shown in Table 1) and understanding the nature of preliminary economic relationships while determining the appropriate mathematical formulation. The data is available from (https://www.coingecko.com), allowing us to construct the econometric model as follows:

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Table 1: Variables Specification

No.	Variable	Variable Type	Symbol
1	Global gold price	Dependent variable	Y
2	Global oil prices	Independent variable	X_1
3	Federal interest rate	Independent variable	X_2
4	Ethereum price	Independent variable	X_3
5	Economic crises	Dummy variable	X_4

We begin by testing the data and examining appropriate econometric methods to obtain the best unbiased estimators. Diagnostic tests for the variables (Y, X_1, X_2, X_3, X_4) revealed that they do not follow a normal distribution based on the Jarque-Bera test, as the test statistic was significant (p-value = 0.00)—except for global oil prices (X_1), which showed normality (p-value = 0.38). This suggests that Ordinary Least Squares (OLS) regression may be unsuitable, prompting the need to explore more robust estimation techniques.

Nevertheless, we will apply conventional econometric methods used in prior studies and compare them with advanced approaches, including the Threshold Regression (TR) model, to obtain optimal parameter estimates and avoid spurious regression issues (Gonzalo, 2021: 366).

Second: Ordinary Least Squares (OLS) Method

The econometric model is estimated using a multiple linear regression equation (OLS) to analyze the functional relationships between economic variables, incorporating the dummy variable (X_4) for improved estimation. Equation (2) illustrates the following:

Y = 1600 – 8.64 x1+ 106 .61x2+ 0.14 x3+ 399.70X4 ----------(2)

Table 2: Impact of Key Variables on Global Gold Prices Based on Regression Analysis

Independent Variable	Effect on Gold Price	Magnitude of Impact	Statistical Relationship
Global oil prices (per unit increase)	Decrease	-8.64	Inverse
Federal interest rate (per unit increase)	Increase	Significant	Positive
Ethereum price (per unit increase)	Increase	+0.14	Positive
Economic shocks (during crises)	Increase	+399.7	Strong positive

From the preceding analysis, we observe statistically significant functional relationships between the economic variables under study. Table (2) shows that:

(1) An increase in global oil prices leads to an increase in the dependent variable (Y) represented by gold prices. (2) Increases in interest rates, Ethereum prices, and crisis intensity all contribute to rising gold prices.

The independent economic variables collectively explain 80% of the variations in global gold prices. However, notable findings include:

- Exceptionally high parameter significance levels (p = 0.00)
- A substantially large constant term (1600)
- Elevated Akaike Information Criterion (AIC) values

These observations suggest that the estimated econometric model may potentially suffer from certain specification problems.

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Third: Statistical Analysis of Multiple Regression Equations

The statistical analysis of the multiple regression equations, as shown in Table (3), reveals generally acceptable results from a statistical standpoint for the estimated econometric model. However, certain noteworthy observations emerge that warrant careful consideration. The model exhibits an elevated Akaike Information Criterion (AIC) value of 13.31, coupled with evidence of positive autocorrelation as indicated by the Durbin-Watson test statistic of 0.67. These findings raise significant concerns about the potential presence of spurious regression in the model, despite its relatively high coefficient of determination (R^2). The coexistence of these contradictory indicators – a good model fit as suggested by R^2 alongside problematic diagnostic test results – suggests possible underlying specification issues that may affect the model's reliability. This apparent paradox highlights the need for further investigation into the model's structure, particularly regarding its autocorrelation properties and variable selection, to ensure the validity of the estimated relationships. The results underscore the importance of not relying solely on goodness-of-fit measures when evaluating regression models, but rather conducting comprehensive diagnostic testing to uncover potential econometric problems that could compromise the model's conclusions.

Table 3: OLS assessment results.

Model	R^2	$prob_\beta$	$prob_F$	D-W	Akaike
OLS	0.80	X1=0.00 X2=0.00 X3=0.00 X4=0.00	0.00	0.76	13.31

Fourth: Diagnostic Testing of the Regression Equation

It is particularly important to examine potential econometric issues to assess the reliability of the estimated model's results. The regression equation incorporating a time trend variable represents a preliminary attempt to detect spurious regression. The statistically significant coefficient for the trend variable ($p = 0.00$), being below the 0.05 threshold according to the t-test, strongly indicates the presence of spurious relationships in the model. Furthermore, the estimated econometric model appears to suffer from several specification problems, including autocorrelation and heteroskedasticity. This is evidenced by significant test statistics from diagnostic checks: the F-statistic, Breusch-Godfrey LM test ($p = 0.00$), and heteroskedasticity test ($p = 0.02$) all show statistically significant values. Additionally, the model demonstrates structural instability, as visually confirmed in Figure (2). These findings collectively suggest that while the model may appear theoretically sound, its statistical properties raise serious concerns about the validity of its estimates and the robustness of its conclusions. The presence of these multiple econometric issues necessitates either model respecification or the application of more advanced estimation techniques to obtain reliable results.

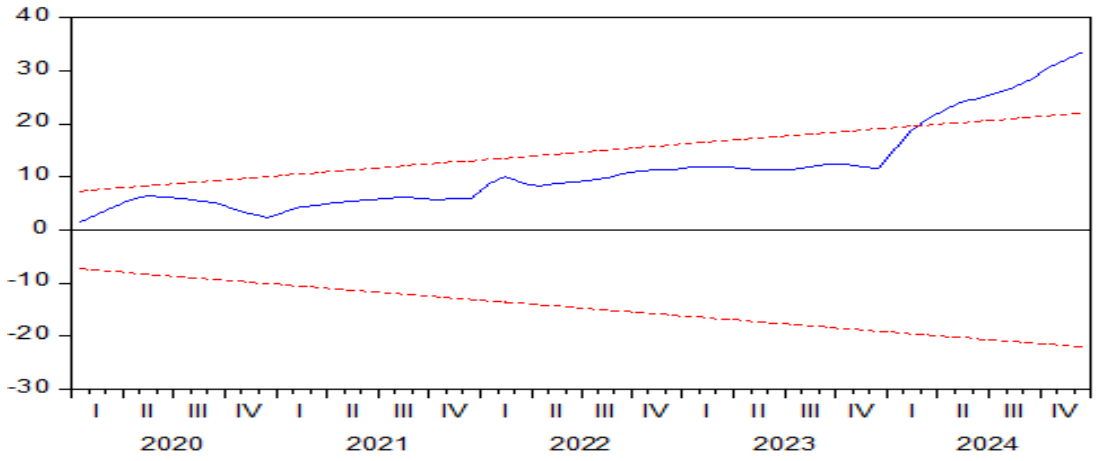

Figure 2: Cusum test results.

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Application of Threshold Regression (TR) Method

Unit Root Test:

The unit root test represents a crucial diagnostic tool for examining time series stationarity. A time series achieves stationarity when it meets specific conditions, including constant variance over time. In the current study, the variables under examination showed non-stationarity at level form (p=0.74 for all variables using Levin-Lin-Chu t* test with constant), but achieved stationarity at first difference (p=0.00), as detailed in Table (4). This finding guides researchers in selecting appropriate statistical methodologies (such as NARDL, ARDL, TR, or STAR models) to avoid spurious regression problems.

Table 4: Stationarity Test Results for Economic Variables

Result	Prob.	Statistic	Test	Form
Non-stationary	0.74	0.66	Levin-Lin-Chu t*	Level
Stationary	0.00	20.24	Levin-Lin-Chu t*	First difference

Source: Researcher's calculations using EViews 12

Nonlinear Dependence Test (BDS Test):

The BDS test examines the presence of nonlinear relationships between independent and dependent variables. The test statistics (z-stat.) showed significant results (p=0.00) across all estimated dimensions (2-6), strongly indicating nonlinear relationships between the studied independent variables and the dependent variable (Y). This finding aligns with the unreliability of multiple regression results in Equation (1), despite including dummy variables to improve model quality. The BDS test results (Table 5) support the selection of a Threshold Regression (TR) model to better capture the dynamics influencing global gold prices.

Table 5: BDS linear relationship test.

BDS Test for RESID04
Date: 03/28/25 Time: 09:41
Sample: 2017M01 2024M12
Included observations: 96

Dimension	BDS Statistic	Std. Error	z-Statistic	Prob.
2	0.095280	0.005749	16.57363	0.0000
3	0.145558	0.009194	15.83239	0.0000
4	0.162023	0.011012	14.71300	0.0000
5	0.164758	0.011544	14.27280	0.0000
6	0.160446	0.011195	14.33177	0.0000

Raw epsilon	359.7557		
Pairs within epsilon	6520.000	V-Statistic	0.707465
Triples within epsilon	467604.0	V-Statistic	0.528524

Dimension	C(m,n)	c(m,n)	C(1,n-(m-1))	c(1,n-(m-1))	c(1,n-(m-1))^k
2	2628.000	0.588578	3136.000	0.702352	0.493298
3	2170.000	0.496454	3083.000	0.705331	0.350896
4	1784.000	0.417017	3040.000	0.710612	0.254995
5	1468.000	0.350693	2990.000	0.714286	0.185934
6	1202.000	0.293529	2926.000	0.714530	0.133083

Bai-Perron Test:

Table (6) presents the results of the F-statistic test according to the Bai-Perron procedure, showing both threshold values and their corresponding critical values for statistically significant thresholds. The test results clearly reject the null hypothesis (H_0) of a single regime, providing strong evidence in favor of the alternative hypothesis (H_1) which indicates the existence of three distinct threshold levels in the econometric model.

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Table 6: Bai-perron relationship test.

Multiple breakpoint tests
Bai-Perron tests of L+1 vs. L sequentially determined breaks
Date: 03/28/25 Time: 10:11
Sample: 2017M01 2024M12
Included observations: 96
Breaking variables: C
Break test options: Trimming 0.15, Max. breaks 5, Sig. level 0.05

Sequential F-statistic determined breaks: 3

Break Test	F-statistic	Scaled F-statistic	Critical Value**
0 vs. 1 *	160.8534	160.8534	8.58
1 vs. 2 *	202.3288	202.3288	10.13
2 vs. 3 *	15.09645	15.09645	11.14
3 vs. 4	9.279982	9.279982	11.83

* Significant at the 0.05 level.
** Bai-Perron (Econometric Journal, 2003) critical values.

Break dates:

	Sequential	Repartition
1	2020M01	2020M01
2	2023M11	2022M09
3	2022M09	2023M11

TR threshold estimation

The Bai-Perron test results presented in Table (6) demonstrate the existence of multiple statistically significant thresholds in the relationship between gold prices and its determinants. The test decisively rejects the null hypothesis (H_0) of a single regime, instead supporting the alternative hypothesis (H_1) that identifies three distinct threshold levels in the econometric model. These structural breaks indicate that the relationship between gold prices and explanatory variables undergoes fundamental changes at specific critical values.

The Bai-Perron procedure's F-statistic exceeds all conventional critical values, providing robust statistical evidence for these threshold effects. The identification of three regimes suggests that gold price dynamics operate differently across varying economic conditions, with each threshold representing a transition point where the nature of these relationships changes significantly. This finding has important implications for modeling gold price behavior, as it confirms that a single linear specification would be inadequate to capture these complex, state-dependent relationships.

The test results validate the use of a multi-regime threshold regression approach, showing that gold price responsiveness to factors like oil prices, interest rates, and cryptocurrency values varies substantially depending on which price regime the market is in. This regime-dependent behavior helps explain why conventional linear models often produce unreliable estimates when analyzing gold price movements, particularly during periods of market stress or transition between these identified thresholds.

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Table 4: thresholds levels of the gold price.

Dependent Variable: Y
Method: Discrete Threshold Regression
Date: 03/29/25 Time: 10:46
Sample (adjusted): 2017M02 2024M12
Included observations: 95 after adjustments
Variable chosen: Y(-1)
Selection: Trimming 0.15, , Sig. level 0.05
Threshold variables considered: Y(-1) Y(-2) Y(-3)
Note: final equation sample is larger than selection sample

Variable	Coefficient	Std. Error	t-Statistic	Prob.
Y(-1) < 1644.1599 -- 39 obs				
C	1222.723	135.6641	9.012869	0.0000
X1	8.757486	2.681986	3.265299	0.0016
X2	-234.4502	39.69570	-5.906185	0.0000
X3	-0.010244	0.069808	-0.146743	0.8837
1644.1599 <= Y(-1) < 1918.0099 -- 32 obs				
C	1906.812	76.37148	24.96759	0.0000
X1	-2.775672	1.603892	-1.730585	0.0872
X2	31.30644	15.59900	2.006952	0.0480
X3	0.021280	0.024548	0.866873	0.3885
1918.0099 <= Y(-1) -- 24 obs				
C	2071.375	143.8064	14.40391	0.0000
X1	-7.370191	3.584207	-2.056296	0.0429
X2	5.973243	44.56157	0.134045	0.8937
X3	0.317888	0.032607	9.748931	0.0000

R-squared	0.916810	Mean dependent var	1725.376
Adjusted R-squared	0.905785	S.D. dependent var	405.1110
S.E. of regression	124.3468	Akaike info criterion	12.60162
Sum squared resid	1283357.	Schwarz criterion	12.92422
Log likelihood	-586.5770	Hannan-Quinn criter.	12.73197
F-statistic	83.15593	Durbin-Watson stat	1.123486
Prob(F-statistic)	0.000000		

Goodness of fit tests

The estimation of the standard model parameters and the determination of the nature of the relationship between economic variables in both the short and long term requires ensuring that the model is free from standard problems. This necessitates conducting several statistical tests, as follows:

The statistical test results shown in Table (7) indicate that the independent variables (X_1, X_2, X_3) explain 91% of the variations in global gold prices (Y). The overall significance of the model, as per the F-test, was statistically significant ($p = 0.00$) at the 5% significance level. Additionally, the Akaike Information Criterion (AIC) value was lower than that of the OLS-estimated model, reaching 12.60, while the coefficient of determination (R^2) showed a clear increase. These findings confirm the reliability of the econometric model and its suitability for economic forecasting.

The LM test results in Table (8) reveal that the F-statistic had a significance value of 0.63, which is not statistically significant (greater than 0.05). This supports the acceptance of the null hypothesis, indicating that the estimated econometric model does not suffer from autocorrelation problems.

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Table 8: Autocorrelation Test Results for the Primary Econometric Model

Breusch-Godfrey Serial Correlation LM Test:			
F-statistic	33.86538	Prob. F(2,81)	0. 6311
Obs*R-squared	24.22887	Prob. Chi-Square(2)	0. 3114

Heteroskedasticity test

Table (9) shows that the F-statistic's significance value reached 0.09, which is not statistically significant (greater than 0.05). This implies that we fail to reject the null hypothesis, confirming that the estimated econometric model does not suffer from heteroskedasticity problems.

Table (9): Heteroskedasticity Test

Heteroskedasticity Test: Breusch-Pagan-Godfrey			
F-statistic	1.661859	Prob. F(11,83)	0.0968
Obs*R-squared	17.14687	Prob. Chi-Square(11)	0.1036
Scaled explained SS	25.74140	Prob. Chi-Square(11)	0.0071

Multicollinearity Test:

The Variance Inflation Factor (VIF) test confirms that the study variables do not suffer from multicollinearity issues, as all VIF values for the economic variables were below the threshold of 10. This indicates the absence of significant linear dependence among the explanatory variables.

Structural Stability Test of Residuals:

To verify the structural stability of the econometric model and assess the consistency between long-term and short-term parameter estimates, the Cusum of Squares (Cusum Sq.) test was employed. As illustrated in Figure (3), the test results demonstrate that the model exhibits robust structural stability, with no evidence of structural breaks or parameter instability over the sample period.

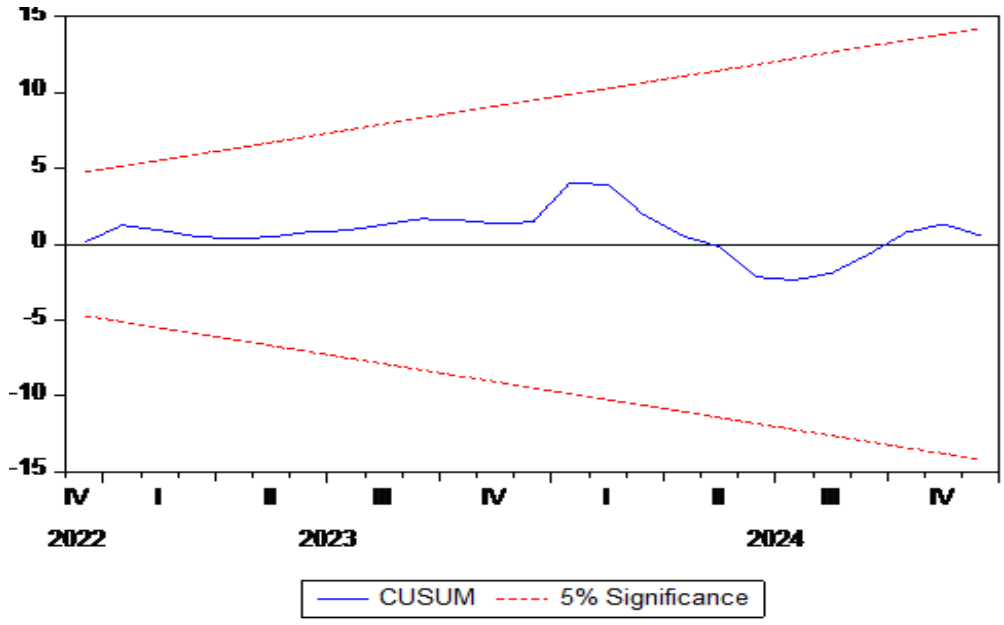

Figure 3: Cusum of sequence.

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Global Gold Price Estimation

Forecasting means predicting future values of a variable (Jaballah, 2020: 84). Using the Threshold Regression (TR) model, we can predict monthly global gold prices for all of 2024, as shown in Table 10. By comparing actual prices with the TR model's predictions (both static and dynamic versions), we can check how accurate the model is. Since there's little difference between actual and predicted prices, this proves the TR model works well for forecasting gold prices.

Table (10): Actual vs. Predicted Gold Prices for 2024

monthly	True values	static model	Dynamic model
1/ 2024	2736.35	2299.29	2294.55
2 / 2024	2662.89	2351.41	2350.55
3 /2024	2578.41	2552.87	2563.30
4 /2024	2456.3	2503.56	2509.97
5/ 2024	2422.3	2471.13	2470.62
6/2024	2333.02	2641.63	2647.84
7 / 2024	2391.87	2449.97	2439.12
8/ 2024	2381.97	2342.02	2340.60
9/2024	2461.7	2275.52	2272.33
10 /2024	2560.87	2318.94	2320.945
11/ 2024	2620.39	2512.24	2520.36
12 / 2024	2700	2808.06	2810.44

Findings and Recommendations

Key Findings:

The study revealed sharp fluctuations in global gold prices between 2017-2024, driven by the COVID-19 pandemic and the Russia-Ukraine war, which disrupted financial markets.

The BDS test confirmed nonlinear relationships between economic variables, supporting the use of Threshold Regression (TR) to avoid spurious regression.

The TR model showed: An inverse relationship between gold and oil prices (in Thresholds 2 & 3). A positive link between gold prices, interest rates, and Ethereum—consistent with OLS results.

Statistical tests confirmed the model's reliability, allowing accurate gold price forecasts even in unstable economies.

Recommendations:

Gold as a Strategic Asset: Despite volatility, gold's role has expanded from a safe-haven to a key investment tool for central banks and financial institutions to hedge against global shocks.

International Conference Proposal: To address gold price instability and the declining dominance of the US dollar, an international conference should establish a new monetary framework.

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Call for Advanced Modeling: Economists should adopt nonlinear econometric models (like TR) to better capture real-world economic relationships and avoid spurious regression.

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